Master program in Informatics: Data Science

Dan Olteanu

September 2024

Contents

— About IfI/Professors

— General Information

— Structure of MSc Programs: Compulsory Module, Master's Project, Core Elective, Thesis

— MSc Data Science

— Hints

— Questions/Whom to contact

— Library

— Welcome event for new Master's students with major Informatics

IfI: The Department of Informatics

— Founded in 1970 (IfI = Institut für Informatik)

— Part of the Faculty of Business, Economics and Informatics

— 18 Professors, 130 PhD students and Post-Docs

— 500 Bachelor's students

— 600 Master's students

— Campus Oerlikon

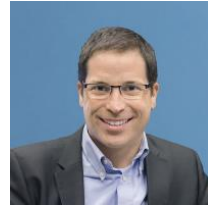**You!**

IfI Professors

Alberto Bacchelli

Zurich
Empirical
Software Engineering
Team

Jürgen Bernard

Interactive
Visual
Data
Analysis Group

Abraham Bernstein

Dynamic and
Distributed
Information
Systems Group

Michael Böhlen

Data-
Base
Technology
Group

Thomas Fritz

Human
Aspects of
Software
Engineering

Harald Gall

Software
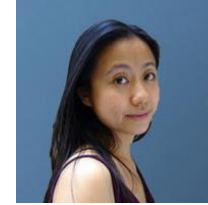Evolution and
Architecture
Lab

Manuel Günther

Artificial
Intelligence and
Machine
Learning Group

Anikó Hannák

Social
Computing
Group

Elaine Huang

Zurich
People
and
Computing Lab

Dan Olteanu
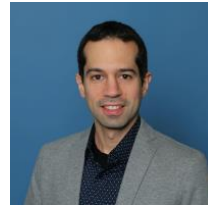
Data
Systems and
Theory Group

Renato Pajarola

Visualization and
Multi-
Media
Lab

Giorgia Ramponi

Autonomous Sequential
Learning and
Predictive
Intelligence Lab

Davide Scaramuzza

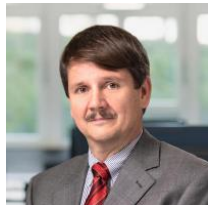Robotics and
Perception
Group

Gerhard Schwabe

Information
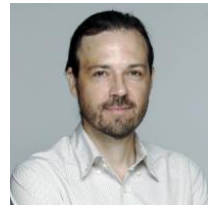Management
Research
Group

Sven Seuken

Computation and
Economics Research
Group

Burkhard Stiller

Communication
Systems
Group

Claudio Tessone

Blockchain and
Distributed
Ledger
Technologies

Martin Volk

Computational
Linguistics

General Information Online

Dean's Office: https://www.oec.uzh.ch/en/studies.html

➢ Study Regulations, Admission, Enrollment, Changing Programs, Course Booking, Important Dates, Petitions/Appeals, …

IfI: https://www.ifi.uzh.ch/en/studies/msc-info.html

➢ Specific to Informatics: Fact Sheets (legally binding!), Topics/Professors, Tutors/TAs, also these slides for later reference

Please read the regulations and fact sheets!

The presentations held at the **Faculty's Master Welcome Day** are available from:
https://www.oec.uzh.ch/en/studies/events/mwd.html

Structure of the MSc Programs

All programs comprise…

— a compulsory module

— a Master's Project (group work!)

— modules from core/elective areas

— a Master's Thesis at the end

More on these components on the next slides…

Five Major MSc study programs				90 ECTS credits
Information Systems	Software Systems	People-Oriented Computing	Artificial Intelligence	Data Science
IS	SOSY	POC	AI	DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Compulsory Module

The compulsory module is specific to your study program.

For Data Science: Foundations of Data Science

  Covers introductory topics to machine learning
  Main focus on the mathematical underpinning of why and how
  Strong practical component requiring programming

Prerequisites
  Programming: Prior exposure to any programming language is useful and necessary
  Mathematics: Linear algebra, Multivariate calculus, Probability theory

Master's Project

The Master's Project…

— is a **group project** (= at least 2 students)

— is an **intensive and demanding** project worth 15 ECTS credits

— best time: During semester break

— max. 12 months to complete

— must be supervised by an IfI professor

➢ **Check the fact sheet!**

IfI organizes a **Master's Project Market** each semester

➢ Some open projects are presented and you can find peers

Five Major MSc study programs				90 ECTS credits
Information Systems IS	Software Systems SOSY	People-Oriented Computing POC	Artificial Intelligence AI	Data Science DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Elective Areas

Core elective area

Specific to your Major study program (IS, SOSY, POC, AI, or DS).

INF elective area

All modules offered by IfI on the Master's level (definition in the Study Regulations, p. 31)

WWF elective area

All modules offered by WWF on the Master's level (definition in the Study Regulations, p. 31)

Five Major MSc study programs				90 ECTS credits
Information Systems IS	Software Systems SOSY	People-Oriented Computing POC	Artificial Intelligence AI	Data Science DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Core Elective Area: Data Science (1/2)

Data Management

— Systems for Data Science

— Temporal and Spatial Data Management

— XML and Databases

— Database Systems Lab

Algorithms

— Combinatorial Algorithms

— Randomized Algorithms

— Efficient Algorithms for Frequently Asked Questions

Machine Learning

— **Foundations of Data Science (compulsory)**

— Deep Learning

— Reinforcement Learning

— Advanced Machine Learning

Five Major MSc study programs				90 ECTS credits
Information Systems IS	Software Systems SOSY	People-Oriented Computing POC	Artificial Intelligence AI	Data Science DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Core Elective Area: Data Science (2/2)

Data Visualization

— Interactive Visual Data Analysis

Ethics

— Artificial Intelligence: Technology and Law

Data Science Applied in Economics and Business Administration

— Statistical Foundations for Finance
(Mathematical and Computational Statistics
with a View Towards Finance and Risk Management)

— Network Science

— Blockchain and Crypto Economics

— Real Analysis I

Five Major MSc study programs				90 ECTS credits
Information Systems	Software Systems	People-Oriented Computing	Artificial Intelligence	Data Science
IS	SOSY	POC	AI	DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Master's Thesis

The Master's Thesis…

— must be written in your **Major area**

— is a **full-time endeavor** worth 30 ECTS credits (i.e., no significant side jobs or other study activities possible)

— max. 6 months to complete

— can only be started once the Master's Project has been successfully completed

— must be supervised by an IfI professor

➢ **Check the fact sheet!**

➢ Find topics on the IfI website (check the individual group pages) or contact the groups directly.

Five Major MSc study programs				90 ECTS credits
Information Systems	Software Systems	People-Oriented Computing	Artificial Intelligence	Data Science
IS	SOSY	POC	AI	DS
Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS	Compulsory module 6 ECTS
Master's project 15 ECTS				
Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS	Core elective area 18 ECTS
INF elective area 15 ECTS				
WWF elective area 6 ECTS				
Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS	Master's thesis 30 ECTS

Further Modules

Seminar

— one seminar is mandatory

— recommended from 2nd semester

— check the Course Catalogue early and register for the seminar within the seminar's application deadline

➢ **Note: this deadline is shorter than the regular module booking deadline!**

Independent Study

— Optional module

➢ **Check the fact sheet!**

External Modules

— ETH: https://www.oec.uzh.ch/en/studies/credits/external-eth.html

— Mobility within Switzerland: https://www.uzh.ch/cmsssl/en/studies/application/chmobilityout.html

— International exchange: https://www.int.uzh.ch/en/out.html

— Partner universities: https://www.oec.uzh.ch/en/international/engagement.html

Data Science

Note on External Courses

A course from another university may be counted against the Data Science core elective stint only if:

— It is directly relevant to Data Science,

— It is of a good scientific standing, teaching principles as opposed to a hands-on tutorial on using Data Science tools, and

— It does not overlap significantly with the Data Science core electives.

Data Science on the IfI web page:

https://www.oec.uzh.ch/en/studies/master/it/ds.html

It is possible to change the Major under certain conditions: https://www.oec.uzh.ch/en/studies/enrollment/change.html

Minor

Available Minor programs are listed in the Course Catalogue:

https://studentservices.uzh.ch/uzh/anonym/vvz/index.html

➢ Master of Science UZH in Informatics (RVO22) > Minor 30

Note: Modules in the *Minor area Informatics (INF)* are offered only in the Fall semester. There are no modules in the *Minor area Informatics* in the Spring semester. Take this into account when planning your next few semesters.

You can change your Minor under certain conditions:

https://www.oec.uzh.ch/en/studies/enrollment/change.html

Hints (1/3)

— **Focus on the compulsory modules** in your Major and Minor programs

— **Make a study plan**

➢ Check course schedule of previous years for planning. Courses often stay in the same slot. Suggested order:

1st semester:
Compulsory module and course work

2nd semester:
Course work, Master's Project

3rd semester:
Remaining course work, finish Master's Project

4th semester:
Master's Thesis

— **Read the fact sheets** well before starting the respective module or thesis

— All legally binding information regarding modules, incl. exam dates, are in the UZH Course Catalogue. Most modules additionally have a website or OLAT course, but **the Course Catalogue is binding**

Hints (2/3)

— **Check the study websites** of the Faculty and the Department:

   — https://www.oec.uzh.ch/en/studies.html

   — https://www.ifi.uzh.ch/en/studies/msc-info.html

— Note that **booking/cancellation deadlines** may vary between faculties.

— Working at IfI: Some modules/courses seek **Tutors or Teaching Assistants**.

➤ Check out https://www.ifi.uzh.ch/en/studies/msc-info.html and the individual group pages.

— Mentoring, social events, representatives: Informatics **student association ICU**: https://icuzh.ch

Hints (3/3)

— **Consider the policies on plagiarism and scientific integrity.** You find the fact sheet on plagiarism on this website:

  — https://www.ifi.uzh.ch/en/studies/msc-info.html

  — The Swiss Academies of Arts and Sciences issued a Code of conduct for scientific integrity: https://akademien-schweiz.ch/en/themen/scientific-culture/scientific-integrity-1/

— UZH provides a number of **advice and support services** for topics such as Gender Equality and Diversity, Disability, or Psychological Counseling:

  — https://www.students.uzh.ch/en/advice.html

— **Practise passive and active English without tools** (in exams, no translation tools are permitted)

  — UZH offers English courses: https://www.sprachenzentrum.uzh.ch/en/Sprachkurse/Englisch.html

Questions/Whom to Contact

If you have questions, please follow these steps:

1. Read the Study Regulations: https://www.oec.uzh.ch/en/studies/regulations.html

2. Read the IfI's study information and fact sheets: https://www.ifi.uzh.ch/en/studies/msc-info.html

3. Check information in the Course Catalogue: https://studentservices.uzh.ch/uzh/anonym/vvz/index.html

4. Send e-mail to the respective person:

For questions about
— Master's Project
— Independent Studies
— Master's Thesis
— Informatics studies in general
Contact the IfI's Study Coordinator, Daniela Bärtschi: studies@ifi.uzh.ch

For questions specific to a course: Contact the instructor.

For everything else, contact the Dean's Office: https://www.oec.uzh.ch/en/staff/team.html (Study Affairs)

And of course you can ask your fellow students, for example by joining the student association ICU: https://icuzh.ch

Did you know?

The Informatics Library is part of the UB Sciences on the Irchel campus!

Books can be delivered to Oerlikon free of charge:
Simply select "UB Psychology" as pick-up location in swisscovery.

https://t.uzh.ch/1mr
or https://www.ub.uzh.ch/en

IfI Master Welcome Event
for incoming MSc Informatics students

Monday, 23 September 2024, 12:15 in BIN 2.A.01

No registration necessary